

WO 01/11702 A1

PCT/DE00/02723

Electrode and photoelectrochemical cell with four layers, method for producing a printable paste which is free from water and binder agents, containing an electrolyte and/or carbon and electrolyte or only carbon, and electrode

Claim Amendments

Claim 1 (currently amended)

Procedures Procedure for manufacturing an electrolyte containing and/or and carbon containing printable paste which is free from water, in the form of an electrode material for a counter electrode containing an electrolyte, in particular as electrode material for a photoelectrochemical cell, with the steps:

- a) preparing a pure aprotic solvent or a aprotic solvent containing electrolytic salts and/ or electrolytic auxiliary or a mixture of both;
- b) adding carbon black [[,] e. g. with a large surface and/ or conductive carbon black and/ or graphite [,] e. g. with a very weak electrical resistance or a mixture of at less two of this components to the solvent, so as to produce a suspension;
- c) stirring the solvent containing the carbon black and/ or conductive carbon black or graphite or a mixture of at less two of this components to produce a substantially homogeneous suspension [;] and
- d) treating the substantially homogenized suspension with ultrasound to produce a thick, printable paste.

Claim 2 (currently amended)

Procedures Procedure according to patent claim 1, characterized by the fact that in the solvent the electrolyte salts and the electrolyte auxiliary ~~do exist are each present in a concentration in each case, as it is used for an electrolyte for use~~ in a photoelectrochemical cell [,] ~~i. while as solvent preferentially γ -Butyrolactone is used γ -butyrolactone is used as a aprotic solvent~~, to which ~~are~~ preferably is added 10 weight % of carbon black with a large surface of $20 \text{ m}^2/\text{g}$ or over and/ or conductivity conductive carbon black with ~~an~~ a maximum electrical resistance of $[\text{max.}] 10^{-4} \Omega$, ~~as well as or a mixture of both, and~~ 8 weight % of graphite with ~~an~~ a maximum electrical resistance of $[\text{max.}] 10^{-4} \Omega$, and the received suspension is stirred for 5 minutes and then treated for 15 minutes with ultrasound.

WO 01/11702 A1

PCT/DE00/02723

Claim 3 (currently amended)

Procedures Procedure for manufacturing an electrode, in particular which already include the necessary electrolyte to operate a photoelectrochemical cell, in the form of an electrolyte containing electrode of a photoelectrochemical cell, which cover the following steps:

- a) preparing an electrolyte and [[/or]] carbon containing printable paste [[,]] in particular or only a carbon containing printable paste which is free from water, in the form of a paste, which is manufactured in a procedure according to the claims 1 to 2;
- b) applying and pressing the paste on a substrate or a substrate network, in particular on a [[,]] in the form of an electrode and at least one light absorbing layer containing, substrate network for a photoelectrochemical cell [[,]] and
- c) applying a graphite layer to the paste, preferably by dusting.

Claim 4 (currently amended)

Procedures Procedure according to the claim 3, characterized by the fact that the paste is pressed with a material covered stamp on the substrate or the substrate network, characterized by the facts that the substrate or the substrate network consists of a light reflecting electrical isolation layer of TiO₂ or that the electrical isolating properties of the substrate or substrate network are increased additionally by layers of cloth, paper or plastic foils.

Claim 5 – 9 (cancelled)

Claim 10 (currently amended)

Module consisting of photoelectrochemical cells or other products, which contain an electrolyte and/or a carbon and electrolyte or only a carbon containing printable paste, which was manufactured in a procedure according to the claims 1 to 2.